

Fig. 1

Fig. 2

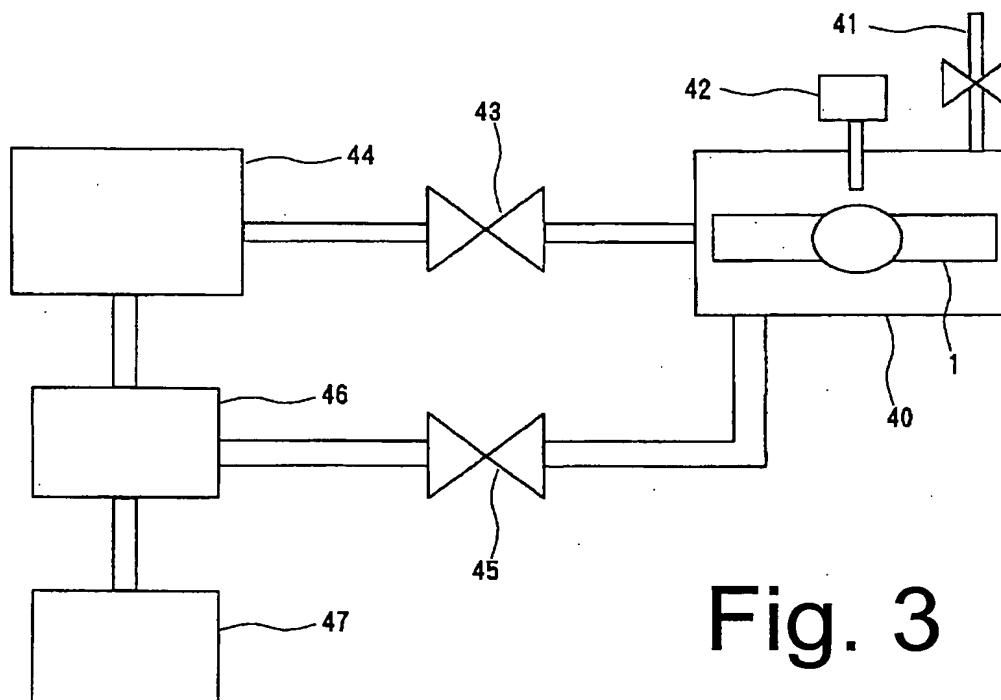
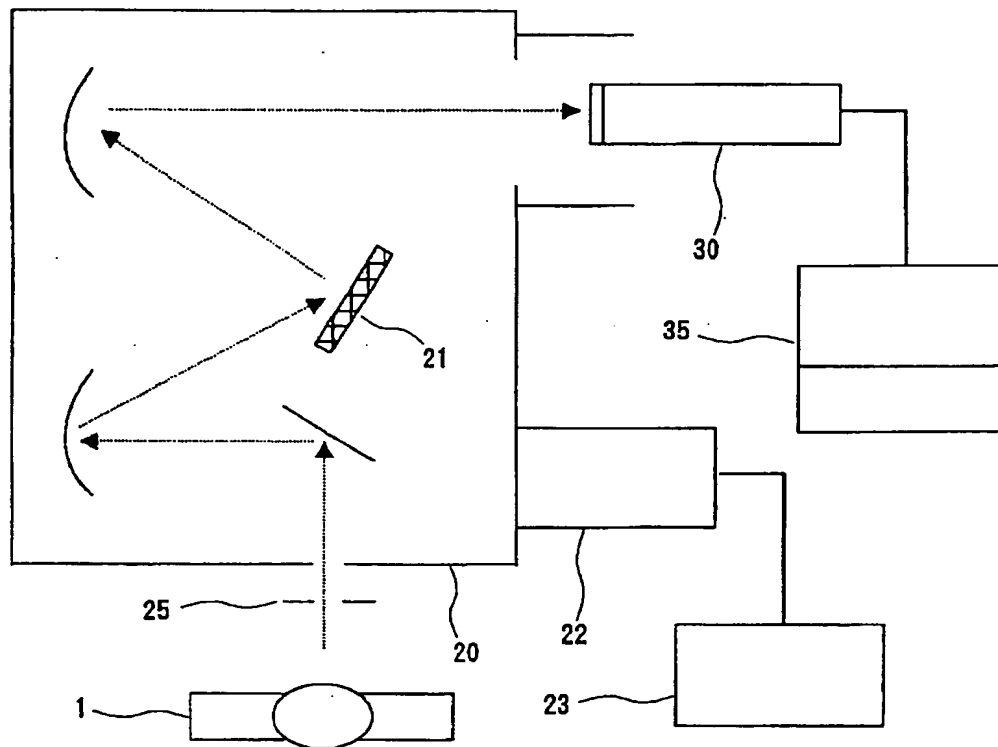


Fig. 3

Fig. 4

	Mixing ratio of the encapsulated gases O <sub>2</sub> /Ar (%)	Condition for the degassing treatment of the material of which the discharge vessel is formed	Condition for the thermal treatment of the electrodes	Ratio b/a	Ratio c/a	Ratio d/a	Ratio e/a	Lumen maintenance factor (%)	Value of the increase of the voltage (V)	Concentration of the carbon compounds (ppm)	Evaluation
1 (comparison)	0	G 1	H 3	$3.0 \times 10^{-5}$	$1.6 \times 10^{-1}$	$2.1 \times 10^{-4}$	$4.0 \times 10^{-4}$	37	13.0		X
2 (comparison)	0	G 3	H 1	$6.5 \times 10^{-5}$	$6.0 \times 10^{-3}$	$4.0 \times 10^{-2}$	$8.8 \times 10^{-4}$	44	9.0		X
3 (comparison)	0	G 3	H 3	$9.7 \times 10^{-6}$	$4.0 \times 10^{-3}$	$6.0 \times 10^{-4}$	$3.9 \times 10^{-4}$	47	8.5		X
4 (comparison)	0.1	G 1	H 1	$2.5 \times 10^{-5}$	$2.2 \times 10^{-1}$	$6.9 \times 10^{-4}$	$3.6 \times 10^{-2}$	55	11.0	3000	X
5 (comparison)	0.1	G 1	H 2	$2.0 \times 10^{-4}$	$1.8 \times 10^{-1}$	$1.5 \times 10^{-4}$	$4.5 \times 10^{-3}$	48	11.5		X
6 (comparison)	0.1	G 1	H 3	$1.5 \times 10^{-4}$	$1.9 \times 10^{-1}$	$2.7 \times 10^{-4}$	$4.8 \times 10^{-4}$	44	8.0		X
7 (comparison)	0.1	G 2	H 1	$3.0 \times 10^{-4}$	$2.7 \times 10^{-2}$	$5.5 \times 10^{-4}$	$4.0 \times 10^{-2}$	50	9.5	600	X
8 (invention)	0.1	G 2	H 2	$4.5 \times 10^{-4}$	$5.4 \times 10^{-2}$	$3.1 \times 10^{-4}$	$1.2 \times 10^{-2}$	83	8.0	300	O
9 (invention)	0.1	G 2	H 3	$3.5 \times 10^{-4}$	$1.4 \times 10^{-1}$	$4.4 \times 10^{-4}$	$6.3 \times 10^{-4}$	87	15.0	200	O
10 (comparison)	0.1	G 3	H 1	$2.0 \times 10^{-4}$	$7.2 \times 10^{-3}$	$4.8 \times 10^{-2}$	$5.5 \times 10^{-4}$	52	12.0		X
11 (invention)	0.1	G 3	H 2	$1.0 \times 10^{-4}$	$4.5 \times 10^{-3}$	$4.5 \times 10^{-3}$	$1.8 \times 10^{-4}$	85	11.0	400	O
12 (invention)	0.1	G 3	H 3	$1.5 \times 10^{-4}$	$4.8 \times 10^{-3}$	$7.2 \times 10^{-4}$	$3.3 \times 10^{-4}$	90	7.5	100	O
13 (comparison)	0.5	G 1	H 1	$6.0 \times 10^{-4}$	$2.1 \times 10^{-1}$	$5.0 \times 10^{-4}$	$3.4 \times 10^{-2}$	43	25		X
14 (comparison)	0.5	G 1	H 2	$5.3 \times 10^{-3}$	$2.1 \times 10^{-1}$	$8.1 \times 10^{-4}$	$5.2 \times 10^{-3}$	39	15		X
15 (comparison)	0.5	G 1	H 3	$3.4 \times 10^{-3}$	$1.9 \times 10^{-1}$	$4.5 \times 10^{-4}$	$4.8 \times 10^{-4}$	45	16		X
16 (comparison)	0.5	G 2	H 1	$7.2 \times 10^{-4}$	$6.0 \times 10^{-2}$	$3.6 \times 10^{-4}$	$3.8 \times 10^{-2}$	50	14	1000	X
17 (invention)	0.5	G 2	H 2	$1.2 \times 10^{-2}$	$1.1 \times 10^{-1}$	$7.5 \times 10^{-4}$	$1.4 \times 10^{-2}$	92	12	500	O
18 (invention)	0.5	G 2	H 3	$7.9 \times 10^{-3}$	$6.0 \times 10^{-2}$	$5.8 \times 10^{-4}$	$6.4 \times 10^{-4}$	90	8.5	300	O

Fig. 5

	Mixing ratio of the encapsulated gases O <sub>2</sub> /Ar (%)	Condition for the degassing treatment of the material of which the discharge vessel is formed	Condition for the thermal treatment of the electrodes	Ratio b/a	Ratio c/a	Ratio d/a	Ratio e/a	Lumen maintenance factor (%)	Value of the increase of the voltage (V)	Concentration of the carbon compounds (ppm)	Evaluation
19 (comparison)	0.5	G 3	H 1	$4.8 \times 10^{-3}$	$6.8 \times 10^{-3}$	$4.6 \times 10^{-2}$	$7.6 \times 10^{-4}$	48	23		X
20 (invention)	0.5	G 3	H 2	$2.6 \times 10^{-3}$	$5.2 \times 10^{-2}$	$5.2 \times 10^{-3}$	$1.3 \times 10^{-4}$	88	16	500	O
21 (invention)	0.5	G 3	H 3	$3.4 \times 10^{-3}$	$4.8 \times 10^{-3}$	$7.3 \times 10^{-4}$	$3.3 \times 10^{-4}$	92	12	320	O
22 (comparison)	1	G 1	H 1	$4.8 \times 10^{-3}$	$2.0 \times 10^{-1}$	$5.0 \times 10^{-4}$	$4.1 \times 10^{-2}$	36	14		X
23 (comparison)	1	G 1	H 2	$1.1 \times 10^{-1}$	$2.4 \times 10^{-1}$	$8.3 \times 10^{-4}$	$5.3 \times 10^{-3}$	51	8	900	X
24 (comparison)	1	G 1	H 3	$4.0 \times 10^{-2}$	$2.0 \times 10^{-1}$	$1.2 \times 10^{-4}$	$4.8 \times 10^{-4}$	37	7.5		X
25 (comparison)	1	G 2	H 1	$5.8 \times 10^{-3}$	$5.9 \times 10^{-2}$	$6.0 \times 10^{-4}$	$4.6 \times 10^{-2}$	45	11		X
26 (invention)	1	G 2	H 2	$9.5 \times 10^{-2}$	$1.3 \times 10^{-1}$	$9.0 \times 10^{-4}$	$9.0 \times 10^{-3}$	90	12.5	600	O
27 (invention)	1	G 2	H 3	$6.5 \times 10^{-2}$	$9.0 \times 10^{-2}$	$1.0 \times 10^{-4}$	$6.3 \times 10^{-4}$	87	16	150	O
28 (comparison)	1	G 3	H 1	$7.2 \times 10^{-2}$	$6.7 \times 10^{-3}$	$5.5 \times 10^{-2}$	$4.0 \times 10^{-4}$	46	25		X
29 (invention)	1	G 3	H 2	$5.2 \times 10^{-2}$	$6.0 \times 10^{-3}$	$1.2 \times 10^{-2}$	$3.3 \times 10^{-4}$	89	14	300	O
30 (invention)	1	G 3	H 3	$1.2 \times 10^{-1}$	$5.1 \times 10^{-3}$	$7.2 \times 10^{-4}$	$4.5 \times 10^{-4}$	91.5	8.5	440	O
31 (comparison)	2	G 1	H 3	$2.5 \times 10^{-1}$	$2.0 \times 10^{-1}$	$1.4 \times 10^{-4}$	$4.0 \times 10^{-4}$	44	8		X
32 (comparison)	2	G 3	H 1	$1.9 \times 10^{-2}$	$6.7 \times 10^{-3}$	$1.5 \times 10^{-2}$	$7.3 \times 10^{-4}$	41	16		X
33 (comparison)	2	G 3	H 3	$1.4 \times 10^{-1}$	$4.8 \times 10^{-3}$	$6.0 \times 10^{-4}$	$3.5 \times 10^{-4}$	---	—		X